SERVICE MANUAL

MODELS:

74-046-00000	Carter Cassette Pump Head 4/6
74-126-00000	Carter Cassette Pump Head 12/6
74-048-00000	Carter Cassette Pump Head 4/8
74-128-00000	Carter Cassette Pump Head 12/8
72-560-100	Carter Cassette, Large
72-560-000	Carter Cassette, Small

⚠ WARNING; PRODUCT USE LIMITATION

These products are not designed for, nor intended for use in, patient connected applications; including, but not limited to, medical and dental use, and accordingly have not been submitted for FDA approval.

PROPRIETARY

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Barnant Company
28W092 Commercial Avenue
Barrington, IL 60010

(847) 381-7050
(847) 381-7053 (Fax)
800-637-3739
A-1299-0831
EDITION 02

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1. INTRODUCTION

Service for this product is performed at three levels: user, dealer and factory/depot repair. This manual describes level 2, dealer service procedures.

User service procedures are described in the operator's manual. Users are encouraged to perform service as described in the operator's manual as well as in special circumstances where special skills and safety are not considerations.

To use this manual, begin with the Troubleshooting section to isolate the fault to a replaceable part or specific repair. The Functional Description and Checkout Procedure sections are also helpful in determining the fault. Dealer repair is limited to procedures described in the Repair Procedures section and to replacement of modules identified in the Replacement Parts List section of this manual. After repair, the product should be checked for proper performance.

Please refer to the operator's manual (A-1299-0814) for:

A) Applications Data

B) Product Description

C) Installation

D) Setup

E) Operation

F) User Calibration

G) User Troubleshooting & Maintenance

H) Accessories

I) Specifications

2. SAFETY CONSIDERATIONS

Servicing must be performed only by personnel trained and skilled in the methods of troubleshooting and repair of mechanical products. Use of procedures other than those described in this manual may result in a safety hazard to service personnel and/or users.

3. FUNCTIONAL DESCRIPTION

3.1 All Models

The pump rotor is driven by a separate drive to pump fluid through tubing compressed, or occluded, between the rollers of the rotor and the curved surface of cassette (72-560-100, 72-560-000). The rollers are made from a self-lubricating PTFE-filled plastic material and are turned by virtue of friction against the tubing. The main rotor shaft is mounted in sealed ball bearings.

3.2 Models 74-046-00000 and 74-048-00000

These models are driven directly from the drive at the same speed as the drive. Operation must be operator-limited to 250 rpm maximum to prevent overheating of the plastic rollers, which can cause damage and loss of pump performance.

3.3 Models 74-126-00000 and 74-128-00000

These models incorporate a 5:1 planetary gear reduction unit and a safety override clutch mounted in an added module at the drive end of the pump head. The clutch prevents damage to the pump head and/or drive unit in the event of a tubing jam or other obstruction to rotor rotation. It is designed to release at 90-110 in-oz torque. Pump operating speed is limited by the gear reduction unit to 1/5 drive speed or 40 rpm.

These models also incorporate a support bracket and an anti-twist bar mounted on the underside of the pump head, and a circular support plate in the center of the rotor. The support bracket prevents deflection of the cassette mounting rods, to permit precise and consistent occlusion settings and pumping performance. The rotor support plate prevents deflection of the roller shafts in the rotor, also to permit precise and consistent occlusion settings and pumping performance.

3.4 Models 72-560-100 and 72-560-000

72-560-100 and 72-560-000 cassettes are designed to function with Manostat tubing links. Occlusion adjustment indicators are included on the cassettes. Using the incorrect indicator to set occlusion will result in over-occlusion or under-occlusion. Over-occlusion may cause pump roller damage by means of overheating the rollers, and/or tubing pull-in into the pump head, and/or premature tubing wear. Under-occlusion will result in loss or reduction of pump performance.

4. TROUBLESHOOTING

Problem	Possible Cause	Corrective Action
Tubing pulls in	1. Occlusion too tight	Instruct operator in proper technique
	2. Damaged or worn tubing retainer	Replace tubing retainer
	3. Frozen Pump Roller(s)	a. Clean & free up roller(s); or b. Replace rotor assembly
Clutch slips excessively (74-126-00000 and 74-128-00000)	1. Too much operating torque	Instruct operator to reduce number, size and/or stiffness of tubing and/or operating pressure
	2. Tubing pulls in and jams	See above.
	3. Occlusion too tight	Instruct operator in proper technique
	4. Stiff rotor bearing(s)	Replace rotor assembly
	5. Defective clutch	Replace clutch
Does not pump	1. Insufficient occlusion	Instruct operator in proper technique
	2. Worn rollers	Replace rotor assembly
Premature tubing wear	1. Occlusion too tight	Instruct operator in proper technique
	2. Stiff or frozen roller(s)	See above
Rotor does not turn	1. Tang broken or worn off	Replace rotor assembly or clutch/drive tang assembly
	2. Roller support plates loose on rotor shaft	Replace rotor assembly
	3. Gear reduction unit damage (74-126-00000 and 74-128-00000 only)	Replace gear reduction unit

5. REPAIR PROCEDURES

5.1 Pump Heads

5.1.1 Rotor Replacement

5.1.1.1 Remove two (2) screws from outer end of pump head.

5.1.1.2 Remove outboard end housing and then o-rings.

5.1.1.3 Remove rotor assembly, finger guard(s) and bottom support bracket (74-126-00000, 74-128-00000 only) simultaneously.

5.1.1.4 Install new rotor assembly, finger guard(s), bottom support bracket and o-rings.

5.1.1.5 Replace outboard end housing, inserting the support rods and anti-twist plate (74-126-00000 and 74-128-00000) into their proper openings. NOTE: Be sure to replace the three (3) wave washers into the rotor bearing pocket, and be sure the wave washers are nested together.

5.1.1.6 Replace the screws, and tighten to 8-10 in-lb.

5.1.2 Finger Guard Replacement

5.1.2.1 Follow procedures 5.1.1.1 and 5.1.1.2 above.

5.1.2.2 Replace the old o-rings with new ones.

5.1.2.3 Follow procedures 5.1.1.5 and 5.1.1.6 above.

5.1.3 O-Ring Replacement

5.1.3.1 Follow disassembly procedure for Rotor Replacement, above.

5.1.4 Clutch Replacement (74-126-00000, 74-128-00000)

5.1.4.1 Remove three (3) screws from gear reducer assembly on drive end of pump head.

5.1.4.2 Remove gear reducer assembly.

5.1.4.3 Remove spiral retaining ring from internal groove in assembly housing.

5.1.4.4 Remove gear reduction unit and thrust washer spacer.

5.1.4.5 Remove clutch/drive tang assembly.

5.1.4.6 Remove thrust washer spacer from tang shaft of clutch/drive tang assembly.

5.1.4.7 Install thrust washer onto tang shaft of new clutch/drive tang assembly.

5.1.4.8 Install new clutch/drive tang assembly, gear reduction unit, thrust washer and spiral retaining ring.

NOTE: Be sure that clutch assembly is thoroughly lubricated with lube #40100312.

5.1.4.9 Attach gear reducer assembly, and tighten screws to 8-10 in-lb.

NOTE: Mounting screws have a high/low thread. Be sure to reinstall them so that the screw threads enter the original threads in the plastic. When properly engaged, very little threading resistance will be evident until final seating.

5.1.5 Gear Reduction Unit Replacement (74-126-00000, 74-128-00000)

5.1.5.1 Follow procedure for Clutch Replacement, above, but do not remove or replace clutch/drive tang assembly.

5.2 Cassettes

5.2.1 Tubing Retainer Replacement

5.2.1.1 Depress release tab and slide retainer out of cassette. The large retainer can be removed by hand. The small retainer requires the use of a pointed tool. Also note that on the latching leg of the cassette, it will be necessary to pull and hold the latch away from the leg.

5.2.1.2 Install the new retainer.

5.2.2 Latch Replacement

5.2.2.1 Pry the snap hooks at the top of the damaged latch out of the cassette body and remove the latch.

5.2.2.2 Snap the new latch into the cassette body.

5.2.3 Latch Spring Replacement (72-560-100)

5.2.3.1 Pry side legs of latch spring apart to remove end tabs from cassette body and remove latch spring.

5.2.3.2 Install new latch spring by inserting end tabs into pockets in cassette body.

5.2.4 Occlusion Bed Replacement

5.2.4.1 Slide occlusion bed out of open end of cassette body, spreading cassette body legs slightly to permit removal.

5.2.4.2 Install new occlusion bed into the cassette body, taking care to align the end of the occlusion bed with the small notch in the top surface toward the adjustment knob side of the cassette assembly.

6. REPLACEMENT PARTS LIST

End housing mounting screw	B-1079-0403
Wave washer	B-1081-0111
Rotor assembly: 74-046-00000	D-2607-0001
Rotor assembly: 74-126-00000	D-2765-0001
Rotor assembly: 74-048-00000	D-2607-0002
Rotor assembly: 74-128-00000	D-2765-0002
Finger guard: 74-046-00000, 74-048-00000	B-2623-0001
Finger guard: 74-126-00000, 74-128-00000	B-3220-0002
Rubber foot: 74-126-00000, 74-128-00000	A-1390-0005
Gear Reducer Assembly mounting screw	B-1079-0320
Clutch/drive tang assembly	B-3477
Clutch spacer	A-3577
Gear reduction unit	B-2690
Gear spacer	B-1081-0148
Spiral retaining ring	B-1508-0021
Occlusion bed: 72-560-100	D-2602
Tubing retainer: 72-560-100	5928
Retainer latch: 72-560-100	5927
Latch spring: 72-560-100	A-3611-0012
Occlusion bed: 72-560-000	D-2603
Tubing retainer: 72-560-000	5924
Retainer latch: 72-560-000	5923
O-ring	GB-2590-0002

7. CHECKOUT PROCEDURE

7.1 Check rotor to be sure it rotates freely.

7.2 Check all rollers to be sure they are free from nicks or other damage, they rotate freely and can move end-to-end .010 - .030".

7.3 Mount pump head onto Carter drive.

7.4 (Models 74-126-00000, 74-128-00000) Install four (4) channels of size 17 Tygon® tubing links, adjust occlusion to #3 ½ on the scale and turn drive on. Rotor must turn with no clutch slippage.

7.5 (Models 74-126-00000, 74-128-00000) Install six (6) channels of size 17 Tygon® tubing links, adjust occlusion to #3 on the scale and turn drive on. Clutch must slip, preventing rotor from turning.

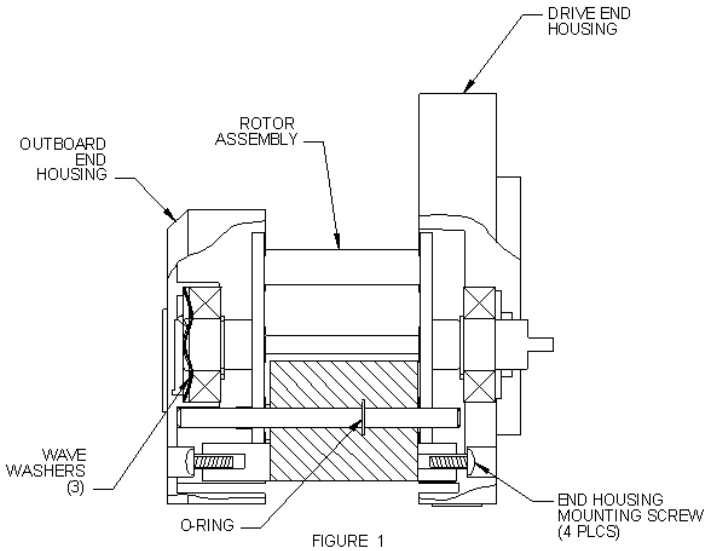

FIGURE 1
74-046-00000, 74-048-00000
PUMP ASSEMBLY

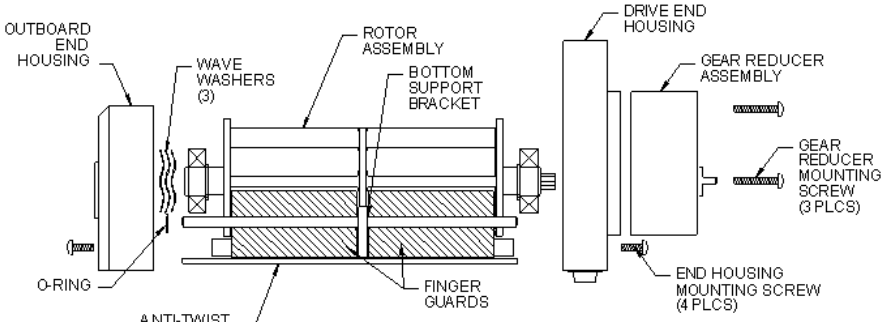

FIGURE 2
74-126-00000, 74-128-00000
PUMP ASSEMBLY

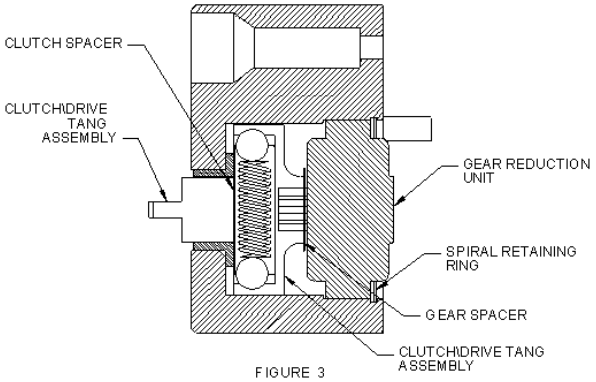

FIGURE 3
GEAR REDUCER ASSEMBLY

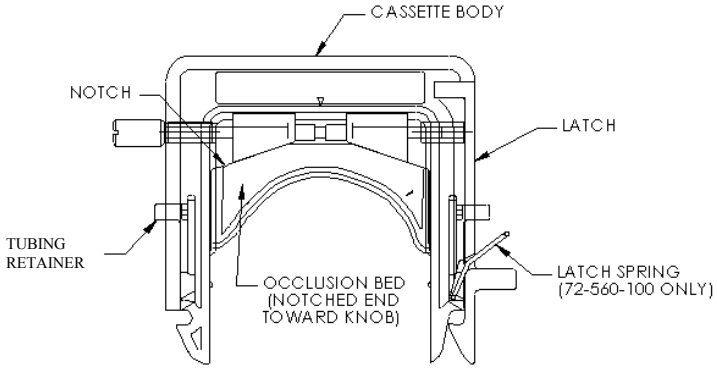

FIGURE 4
CASSETTE ASSEMBLY